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APPLICATION NO.	FILING DATE	FIRST NAMED INVENTOR	ATTORNEY DOCKET NO.	CONFIRMATION NO.
10/691,610	10/24/2003	Yuji Yoshikawa	M1071.1866/P1866	7199

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DICKSTEIN SHAPIRO MORIN & OSHINSKY LLP
Edward A. Meilman
41st Floor
1177 Avenue of the Americas
New York, NY 10036-2714

EXAMINER

MAYES, MELVIN C

ART UNIT	PAPER NUMBER
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1734

DATE MAILED: 03/07/2005

Please find below and/or attached an Office communication concerning this application or proceeding.

Office Action Summary

Application No.

10/691,610

Applicant(s)

YOSHIKAWA ET AL.

Examiner

Melvin Curtis Mayes

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-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --

Period for Reply

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If the period for reply specified above is less than thirty (30) days, a reply within the statutory minimum of thirty (30) days will be considered timely.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133). Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

Status

- 1) ☐ Responsive to communication(s) filed on ____.
- 2a) ☐ This action is **FINAL**. 2b) ☒ This action is non-final.
- 3) ☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

Disposition of Claims

- 4) ☒ Claim(s) 1-20 is/are pending in the application.
- 4a) Of the above claim(s) 14-20 is/are withdrawn from consideration.
- 5) ☐ Claim(s) ____ is/are allowed.
- 6) ☒ Claim(s) 1-13 is/are rejected.
- 7) ☐ Claim(s) ____ is/are objected to.
- 8) ☐ Claim(s) ____ are subject to restriction and/or election requirement.

Application Papers

- 9) ☐ The specification is objected to by the Examiner.
- 10) ☐ The drawing(s) filed on ____ is/are: a) ☐ accepted or b) ☐ objected to by the Examiner.
Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).
Replacement drawing sheet(s) including the correction is required if the drawing(s) is objected to. See 37 CFR 1.121(d).
- 11) ☐ The oath or declaration is objected to by the Examiner. Note the attached Office Action or form PTO-152.

Priority under 35 U.S.C. § 119

- 12) ☒ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).
- a) ☒ All b) ☐ Some * c) ☐ None of:
1. ☒ Certified copies of the priority documents have been received.
2. ☐ Certified copies of the priority documents have been received in Application No. ____.
3. ☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).

* See the attached detailed Office action for a list of the certified copies not received.

Attachment(s)

- 1) ☒ Notice of References Cited (PTO-892)
- 2) ☐ Notice of Draftsperson's Patent Drawing Review (PTO-948)
- 3) ☒ Information Disclosure Statement(s) (PTO-1449 or PTO/SB/08)
Paper No(s)/Mail Date 10/24/03.
- 4) ☐ Interview Summary (PTO-413)
Paper No(s)/Mail Date. ____.
- 5) ☐ Notice of Informal Patent Application (PTO-152)
- 6) ☐ Other: ____.

DETAILED ACTION

Election/Restrictions

(1)

Restriction to one of the following inventions is required under 35 U.S.C. 121:

- I. Claims 1-13, drawn to a method of making a ceramic composition and a ceramic laminate, classified in class 156, subclass 89.14.
- II. Claims 14 and 16, drawn to a ceramic composition, classified in class 501, subclass 135.
- III. Claims 18-20, drawn to a ceramic composition, classified in class 252, subclass 363.5.
- IV. Claims 15 & 17, drawn to a ceramic capacitor, classified in class 428, subclass 210.

(2)

Inventions I and II are related as process of making and product made. The inventions are distinct if either or both of the following can be shown: (1) that the process as claimed can be used to make other and materially different product or (2) that the product as claimed can be made by another and materially different process (MPEP § 806.05(f)). In the instant case, the product can be made from a raw dielectric ceramic powder made by sol-gel or other chemical process.

(3)

Inventions III and I are related as product and process of use. The inventions can be shown to be distinct if either or both of the following can be shown: (1) the process for using the

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product as claimed can be practiced with another materially different product or (2) the product as claimed can be used in a materially different process of using that product (MPEP § 806.05(h)). In the instant case, the product can be used in a different process such as for use in a coating composition.

(4)

The inventions are distinct, each from the other because of the following reasons:

Inventions II and IV are related as mutually exclusive species in an intermediate-final product relationship. Distinctness is proven for claims in this relationship if the intermediate product is useful to make other than the final product (MPEP § 806.04(b), 3rd paragraph), and the species are patentably distinct (MPEP § 806.04(h)). In the instant case, the intermediate product is deemed to be useful as a dielectric (or insulating) material and the inventions are deemed patentably distinct since there is nothing on this record to show them to be obvious variants. Should applicant traverse on the ground that the species are not patentably distinct, applicant should submit evidence or identify such evidence now of record showing the species to be obvious variants or clearly admit on the record that this is the case. In either instance, if the examiner finds one of the inventions anticipated by the prior art, the evidence or admission may be used in a rejection under 35 U.S.C. 103(a) of the other invention.

(5)

Inventions I and IV are related as process of making and product made. The inventions are distinct if either or both of the following can be shown: (1) that the process as claimed can be used to make other and materially different product or (2) that the product as claimed can be made by another and materially different process (MPEP § 806.05(f)). In the instant case the

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product as claimed can be made by a different method such as by laminating the ceramic material layers to the electrodes and then bake the laminate until the water content in the ceramic material layers evaporates. The process as claimed can be used to make a different product such as a ceramic display or a statue.

(6)

Because these inventions are distinct for the reasons given above and have acquired a separate status in the art as shown by their different classification, restriction for examination purposes as indicated is proper.

(7)

During a telephone conversation with Atty: Edward Meilman on March 1st, 2005 a provisional election was made with traverse to prosecute the invention of group I, claims 1-13. Affirmation of this election must be made by applicant in replying to this Office action. Claims 14-20 are withdrawn from further consideration by the examiner, 37 CFR 1.142(b), as being drawn to a non-elected invention.

Applicant is reminded that upon the cancellation of claims to a non-elected invention, the inventorship must be amended in compliance with 37 CFR 1.48(b) if one or more of the currently named inventors is no longer an inventor of at least one claim remaining in the application. Any amendment of inventorship must be accompanied by a request under 37 CFR 1.48(b) and by the fee required under 37 CFR 1.17(i).

Claim Rejections - 35 USC § 112

(8)

The following is a quotation of the second paragraph of 35 U.S.C. 112:

The specification shall conclude with one or more claims particularly pointing out and distinctly claiming the subject matter which the applicant regards as his invention.

(9)

Claims 3-8 are rejected under 35 U.S.C. 112, second paragraph, as being indefinite for failing to particularly point out and distinctly claim the subject matter which applicant regards as the invention.

Claims 3 and 4 claims “the **organic** carbonate powder.” While the polymer is organic, barium carbonate is not. The term “organic” should be deleted.

Claim Rejections - 35 USC § 103

(10)

The following is a quotation of 35 U.S.C. 103(a) which forms the basis for all obviousness rejections set forth in this Office action:

(a) A patent may not be obtained though the invention is not identically disclosed or described as set forth in section 102 of this title, if the differences between the subject matter sought to be patented and the prior art are such that the subject matter as a whole would have been obvious at the time the invention was made to a person having ordinary skill in the art to which said subject matter pertains. Patentability shall not be negated by the manner in which the invention was made.

The factual inquiries set forth in *Graham v. John Deere Co.*, 383 U.S. 1, 148 USPQ 459 (1966), that are applied for establishing a background for determining obviousness under 35 U.S.C. 103(a) are summarized as follows:

1. Determining the scope and contents of the prior art.
2. Ascertaining the differences between the prior art and the claims at issue.
3. Resolving the level of ordinary skill in the pertinent art.

4. Considering objective evidence present in the application indicating obviousness or nonobviousness.

This application currently names joint inventors. In considering patentability of the claims under 35 U.S.C. 103(a), the examiner presumes that the subject matter of the various claims was commonly owned at the time any inventions covered therein were made absent any evidence to the contrary. Applicant is advised of the obligation under 37 CFR 1.56 to point out the inventor and invention dates of each claim that was not commonly owned at the time a later invention was made in order for the examiner to consider the applicability of 35 U.S.C. 103(c) and potential 35 U.S.C. 102(e), (f) or (g) prior art under 35 U.S.C. 103(a).

(11)

Claims 1-4, 12 and 13 are rejected under 35 U.S.C. 103(a) as being unpatentable over Nishiyama et al. 2002/0080555.

Nishiyama et al. disclose a method of making a ceramic capacitor comprising: mixing CaCO_3 , ZrO_2 and TiO_2 with a binder and organic solvent to prepare a slurry; drying the slurry; calcining the slurry; mixing the calcined stock with binder and solvent to form a slurry; forming a stack comprising green sheets shaped from the slurry and internal electrodes; and sintering. The invention can be applied not only to a monolithic ceramic capacitor but also to a single layer ceramic capacitor [0016]-[0018], [0035].

By mixing CaCO_3 , ZrO_2 and TiO_2 with a binder and organic solvent to prepare a slurry and drying the slurry, a mixture of a carbonate powder of Ca having an organic polymer (the binder) absorbed thereon and an oxide of Ti and Zr is obviously provided and is obviously provided by preparing a slurry containing the carbonate powder dispersed in a solution containing the organic polymer (binder) and removing the solvent, as claimed.

(12)

Claims 1-5, 9, 11 and 12 are rejected under 35 U.S.C. 103(a) as being unpatentable over JP 7-118062 in view of Nakamura et al. 2001/0002606.

JP '062 discloses a method of making a barium titanate porcelain comprising: mixing barium carbonate powder, titanium oxide powder and 0.05-0.8 wt% anionic organic dispersant; performing filtration dessication (drying); calcining; pulverizing to form barium titanate granules; kneading the granules with binder to form a slurry; molding a discoid; and firing (Abstract and computer translation). JP '062 does not disclose that the anionic dispersant is an organic polymer.

Nakamura et al. teach that anionic dispersants which are used to make ceramic slurry include polycarboxylic acid-type dispersants [0051].

It would have been obvious to one of ordinary skill in the art to have provided the anionic organic dispersant as polycarboxylic acid-type, as taught by Nakamura et al., as anionic dispersant used to make ceramic slurry. By mixing barium carbonate powder, titanium oxide powder and polycarboxylic acid-type anionic organic dispersant and drying, a mixture of a carbonate powder of Ba having an organic polymer (the polycarboxylic acid dispersant) absorbed thereon, the polymer having a molecular weight in the range of 1000 to 100,000, and an oxide of Ti is obviously provided and is obviously provided by preparing a slurry containing the carbonate powder dispersed in a solution containing the organic polymer (the polycarboxylic acid dispersant) and removing the solvent, as claimed.

(13)

Claims 6-8 and 10 are rejected under 35 U.S.C. 103(a) as being unpatentable over JP 7-118062 in view of Nakamura et al. 2001/0002606 as applied to claim 1 above, and further in view of DE 199 64 060 Abstract.

DE '060 Abstract teaches that in using barium carbonate for thermal solid-state reactions to produce ceramic materials containing oxides, the barium carbonate particles have a specific surface area of not less than $32 \text{ m}^2/\text{g}$ for higher reactivity.

It would have been obvious to one of ordinary skill in the art to have modified the method the references as combined by providing the barium carbonate with specific surface area not less than $32 \text{ m}^2/\text{g}$, thus more than $10 \text{ m}^2/\text{g}$, as taught by DE '060, for higher reactivity.

(14)

Claims 1-5, 9 and 11 are rejected under 35 U.S.C. 103(a) as being unpatentable over Plessner et al. 2,918,381.

Plessner et al. disclose a method of making ceramic dielectric material comprising: milling barium carbonate, titania (TiO_2), calcium carbonate and zirconia (ZrO_2) using 0.1% gum arabic solution in water; drying; calcining; and breaking up the powder (col. 2, line 50 – col. 3, line 2).

By milling barium carbonate, titania, calcium carbonate and zirconia with a gum Arabic solution in water and drying, a mixture of a carbonate powder of Ba and Ca having an organic polymer (the gum arabic) absorbed thereon, the polymer having a molecular weight in the range of 1000 to 100,000 and an oxide of Ti and Zr is obviously provided and is obviously provided by

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preparing a slurry containing the carbonate powders dispersed in a solution containing the organic polymer (gum arabic) and removing the solvent, as claimed.

(15)

Claims 6-8 and 10 are rejected under 35 U.S.C. 103(a) as being unpatentable over Plessner et al. as applied to claim 1 above, and further in view of DE 199 64 060 Abstract.

DE '060 Abstract teaches that in using barium carbonate for thermal solid-state reactions to produce ceramic materials containing oxides, the barium carbonate particles have a specific surface area of not less than $32 \text{ m}^2/\text{g}$ for higher reactivity.

It would have been obvious to one of ordinary skill in the art to have modified the method Plessner for making a ceramic dielectric material by providing the barium carbonate with specific surface area not less than $32 \text{ m}^2/\text{g}$, thus more than $10 \text{ m}^2/\text{g}$, as taught by DE '060, for higher reactivity.

(16)

Claims 1-5, 9 and 11-13 are rejected under 35 U.S.C. 103(a) as being unpatentable over Nishimura et al. 5,014,158 in view of Barrett 3,615,811 or in view of Barrett and Nakamura et al. 2001/0002606.

Nishimura et al. disclose a method of making a laminated ceramic capacitor comprising: mixing BaCO_3 (barium carbonate) and TiO_2 in water; drying; and calcining to form BaTiO_3 ; mixing BaCO_3 and ZrO_2 in the same manner and calcining to form BaZrO_3 ; mixing the components with binder and solvent to form a slurry; forming a laminate of green sheets and inner electrodes; and firing (col. 6, line 40 – col. 8, line 21). Nishimura et al do not disclose mixing BaCO_3 having an organic polymer adsorbed thereon with the TiO_2 .

Barrett teaches that barium carbonate powder particularly adapted for use in ceramic industries and for use in aqueous suspensions, in which cases they are provided with ready dispersability and high reactivity is provided by mixing barium carbonate particles with a minor amount of water, a dispersant not exceeding 2 percent and suitable binder in amount of 1-5 percent based on the dry weight of the barium carbonate and spray drying to form generally spherical particles which are highly reactive, readily dispersed and very low dusting and very free flowing. Useful dispersants include anionic surfactants such as carboxylates and useful binders are those which can be dried to a film and include polyvinyl alcohol and polyvinyl pyrrolidone (Abstract, col. 3, lines 1-10, col. 4, lines 1-72).

Nakamura et al. teach that anionic dispersants which are used to make ceramic slurry include polycarboxylic acid-type dispersants [0051].

It would have been obvious to one of ordinary skill in the art to modified the method of Nishimura et al. for making a laminated ceramic capacitor by providing the barium carbonate for mixing with TiO_2 in water as barium carbonate powder formed by spray drying a mixture of barium carbonate particles, water, dispersant and binder, as taught by Barrett, to form barium carbonate powder which is highly reactive, readily dispersed and very low dusting and very free flowing and particularly useful in ceramic industries and for use in aqueous suspensions. By providing the binder in the mixture to be spray dried as either polyvinyl alcohol or polyvinyl pyrrolidone, as taught by Barrett, and/or by providing the anionic dispersant in the mixture as a carboxylate, such as polycarboxylic acid-type as taught by Nakamura et al., and spray drying, barium carbonate powder having an organic polymer compound adsorbed thereon is obviously produced for subsequently mixing with TiO_2 , the organic polymer having a molecular weight in

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the range of 1000 to 100,000, as claimed. By providing the dispersant in amount not exceeding 2 percent and/or providing the binder in amount of 1-5 percent based on the barium carbonate, organic polymer compound is obviously absorbed in amount within or encompassing the range of 0.1-5% by weight, as claimed in Claim 11.

(17)

Claims 6-8 and 10 are rejected under 35 U.S.C. 103(a) as being unpatentable over Nishimura et al. 5,014,158 in view of Barrett 3,615,811 or in view of Barrett and Nakamura et al. 2001/0002606 as applied to claims 1 and 4 above, and further in view of DE 199 64 060 Abstract.

DE '060 Abstract teaches that in using barium carbonate for thermal solid-state reactions to produce ceramic materials containing oxides, the barium carbonate particles have a specific surface area of not less than 32 m²/g for higher reactivity.

It would have been obvious to one of ordinary skill in the art to have modified the method of the references as combined by providing the barium carbonate with specific surface area not less than 32 m²/g, thus more than 10 m²/g, as taught by DE '060, for higher reactivity.

Double Patenting

(18)

The nonstatutory double patenting rejection is based on a judicially created doctrine grounded in public policy (a policy reflected in the statute) so as to prevent the unjustified or improper timewise extension of the "right to exclude" granted by a patent and to prevent possible harassment by multiple assignees. See *In re Goodman*, 11 F.3d 1046, 29 USPQ2d 2010 (Fed.

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Cir. 1993); *In re Longi*, 759 F.2d 887, 225 USPQ 645 (Fed. Cir. 1985); *In re Van Ornum*, 686 F.2d 937, 214 USPQ 761 (CCPA 1982); *In re Vogel*, 422 F.2d 438, 164 USPQ 619 (CCPA 1970); and, *In re Thorington*, 418 F.2d 528, 163 USPQ 644 (CCPA 1969).

A timely filed terminal disclaimer in compliance with 37 CFR 1.321(c) may be used to overcome an actual or provisional rejection based on a nonstatutory double patenting ground provided the conflicting application or patent is shown to be commonly owned with this application. See 37 CFR 1.130(b).

Effective January 1, 1994, a registered attorney or agent of record may sign a terminal disclaimer. A terminal disclaimer signed by the assignee must fully comply with 37 CFR 3.73(b).

(19)

Claims 1-11 are provisionally rejected under the judicially created doctrine of obviousness-type double patenting as being unpatentable over claim 1 of copending Application No. 10/173665 in view of JP 7-118062 and Nakamura et al. 2001/0002606.

Copending Application No. 10/173665 discloses a method of manufacturing a barium titanate powder comprising: mixing a barium carbonate powder and a titanium oxide powder to form a powder mixture; and calcining the mixture, wherein the barium carbonate powder has a specific surface area of at least about 20 m²/g. Copending Application No. 10/173665 does not claim providing a mixture of barium carbonate having an organic polymer adsorbed thereon and titanium oxide.

JP '062 teaches that in making a barium titanate by mixing and calcining barium carbonate powder and titanium oxide powder, 0.05-0.8 wt% of an anionic organic dispersant is mixed with the powders to mix the powders to homogeneity (Abstract and computer translation).

Nakamura et al. teach that anionic dispersants which are used to make ceramic slurry include polycarboxylic acid-type dispersants [0051].

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It would have been obvious to one of ordinary skill in the art to have modified the modified the method of copending Application No. 10/173665 for manufacturing a barium titanate powder by mixing with the barium carbonate and titanium oxide powders, 0.05-0.8 wt% of an anionic organic dispersant, as taught by JP '062 to mix the powders to homogeneity. Providing the anionic organic dispersant as polycarboxylic acid-type would have been obvious to one of ordinary skill in the art, as taught by Nakamura et al., as anionic dispersant used to make ceramic slurry. By mixing barium carbonate powder, titanium oxide powder and polycarboxylic acid-type anionic organic dispersant and drying, a mixture of a carbonate powder of Ba having an organic polymer (the polycarboxylic acid dispersant) absorbed thereon and an oxide of Ti is obviously provided and is obviously provided by preparing a slurry containing the carbonate powder dispersed in a solution containing the organic polymer (the polycarboxylic acid dispersant) and removing the solvent, as claimed.

This is a provisional obviousness-type double patenting rejection.

Conclusion

(20)

The prior art made of record and not relied upon is considered pertinent to applicant's disclosure.


(21)

Any inquiry concerning this communication or earlier communications from the examiner should be directed to Melvin Curtis Mayes whose telephone number is 571-272-1234. The examiner can normally be reached on Mon-Fri 7:30 AM - 4:00 PM.

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If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, Chris Fiorilla can be reached on 571-272-1187. The fax phone number for the organization where this application or proceeding is assigned is 703-872-9306.

Information regarding the status of an application may be obtained from the Patent Application Information Retrieval (PAIR) system. Status information for published applications may be obtained from either Private PAIR or Public PAIR. Status information for unpublished applications is available through Private PAIR only. For more information about the PAIR system, see <http://pair-direct.uspto.gov>. Should you have questions on access to the Private PAIR system, contact the Electronic Business Center (EBC) at 866-217-9197 (toll-free).


Melvin Curtis Mayes
Primary Examiner
Art Unit 1734

MCM
March 3, 2005